SEQUENCE LISTING

<110> Adler, David A.
       Holloway, James L.
       Baindur, Nand
       Beigel-Orme, Stephanie
       Sheppard, Paul O.

<120> NOVEL BETA-DEFENSINS

<130> 97-44C1

<150> 60/058.335
<151> 1997-10-09

<150> 60/064.294
<151> 1997-11-05

<150> 09/150.786
<151> 1998-09-10

<160> 72

<170> FastSEQ for Windows Version 3.0

<210> 1
<211> 219
<212> DNA
<213> Homo sapiens

<220>
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<222> (1)...(195)

<400> 1
atg agg atc cat tat ctt ctg ttt gct ttg ctc ttc ctg ttt ttg gtg   48
Met Arg Ile His Tyr Leu Leu Phe Ala Leu Leu Phe Leu Phe Leu Val
1   5   10   15

cct gtt cca ggt cat gga gga atc ata aac aca tta cag aaa tat tat   96

```
Pro Val Pro Gly His Gly Gly Ile Ile Asn Thr Leu Gln Lys Tyr Tyr
            20                  25                  30


tgc aga gtc aga ggc ggc cgg tgt gct gtg ctc agc tgc ctt cca aag      144
Cys Arg Val Arg Gly Gly Arg Cys Ala Val Leu Ser Cys Leu Pro Lys
            35                  40                  45


gag gaa cag atc ggc aag tgc tcg acg cgt ggc cga aaa tgc tgc cga      192
Glu Glu Gln Ile Gly Lys Cys Ser Thr Arg Gly Arg Lys Cys Cys Arg
            50                  55                  60

aga aagaaataaa aaccctgaaa catg                                       219
Arg
65
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        <210> 2
        <211> 65
        <212> PRT
        <213> Homo sapiens


        <400> 2
Met Arg Ile His Tyr Leu Leu Phe Ala Leu Leu Phe Leu Phe Leu Val
1                5                  10                  15
Pro Val Pro Gly His Gly Gly Ile Ile Asn Thr Leu Gln Lys Tyr Tyr
            20                  25                  30
Cys Arg Val Arg Gly Gly Arg Cys Ala Val Leu Ser Cys Leu Pro Lys
            35                  40                  45
Glu Glu Gln Ile Gly Lys Cys Ser Thr Arg Gly Arg Lys Cys Cys Arg
            50                  55                  60
Arg
65
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        <210> 3
        <211> 31
        <212> PRT
        <213> Artificial Sequence

        <220>
        <223> Cysteine motif of the Beta-defensin family

        <221> VARIANT
        <222> (2)...(7)
        <223> Xaa2 is independently any amino acid residue.
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preferably not cysteine.
Xaa3 is independently any amino acid residue,
preferably not cysteine.
Xaa4 is independently any amino acid residue,
preferably not cysteine.
Xaa5 is independently any amino acid residue,
preferably not cysteine.
Xaa6 is independently any amino acid residue,
preferably not cysteine.
Xaa7 is independently any amino acid residue,
preferably not cysteine.

<221> VARIANT
<222> (9)...(12)
<223> Xaa9 is independently any amino acid residue,
preferably not cysteine.
Xaa10 is independently any amino acid residue,
preferably not cysteine.
Xaa11 is independently any amino acid residue,
preferably not cysteine.
Xaa12 is independently any amino acid residue,
preferably not cysteine.

<221> VARIANT
<222> (14)...(20)
<223> Xaa14 is independently any amino acid residue,
preferably not cysteine.
Xaa15 is independently any amino acid residue,
preferably not cysteine.
Xaa16 is independently any amino acid residue,
preferably not cysteine.
Xaa17 is independently any amino acid residue,
preferably not cysteine.
Xaa18 is independently any amino acid residue,
preferably not cysteine.
Xaa19 is independently any amino acid residue,
preferably not cysteine.
Xaa20 is independently any amino acid residue,
preferably not cysteine.

<221> VARIANT
<222> (22)...(22)
<223> Xaa is any amino acid residue, preferably not

cysteine

<221> VARIANT
<222> (24)...(29)
<223> Xaa24 is independently any amino acid residue,
preferably not cysteine.
Xaa25 is independently any amino acid residue,
preferably not cysteine.
Xaa26 is independently any amino acid residue,
preferably not cysteine.
Xaa27 is independently any amino acid residue,
preferably not cysteine.
Xaa28 is independently any amino acid residue,
preferably not cysteine.
Xaa29 is independently any amino acid residue,
preferably not cysteine.

<400> 3
Cys Xaa Xaa Xaa Xaa Xaa Xaa Cys Xaa Xaa Xaa Xaa Cys Xaa Xaa Xaa
1   5   10   15
Xaa Xaa Xaa Xaa Gly Xaa Cys Xaa Xaa Xaa Xaa Xaa Xaa Cys Cys
20   25   30

<210> 4
<211> 213
<212> DNA
<213> Artificial Sequence

<220>
<223> Degenerate nucleotide encoding the polypeptide of
SEQ ID NO:2

<221> variation
<222> (1)...(213)
<223> Nucleotides 12, 15, 21, 24, 27, 33, 39, 42, 45,
48, 51, 54, 60, 63, 75, 78, 98, 99, 100, 106, 109,
112, 115, 118, 121, 127, 130, 133, 136, 142, 145,
163, 172, 175, 178, 181, 184, 196, and 199 are
each independently A, T, G or C.

<400> 4
athcaytayy tnytnttygc nytnytntty ytnttyytng tnccngtncc nggncayggn   60
ggnathatha ayacnytnca raartrrnnn tgymgngtnm gnggnggnmg ntgygcngtn   120

ytnwsntgyy tnccnaarga rgarcarath ggnaartgyw snacnmgngg nmgnaartgy   180
tgymgnmgna araartrraa rccntrraay atg   213

        <210> 5
        <211> 20
        <212> DNA
        <213> Artificial Sequence

        <220>
        <223> Oligonucleotide ZC14741

        <400> 5
gagcacttgc cgatctgttc   20

        <210> 6
        <211> 20
        <212> DNA
        <213> Artificial Sequence

        <220>
        <223> Oligonucleotide ZC14740

        <400> 6
ccaggtcatg gaggaatcat   20

        <210> 7
        <211> 18
        <212> DNA
        <213> Artificial Sequence

        <220>
        <223> Oligonucleotide ZC14780

        <400> 7
ggaggaatca taaacaca   18

        <210> 8
        <211> 18
        <212> DNA
        <213> Artificial Sequence

        <220>
        <223> Oligonucleotide ZC14776

<400> 8
gccgatctgt tcctcctt   18

<210> 9
<211> 438
<212> DNA
<213> Homo sapiens

<220>
<221> CDS
<222> (220)...(420)

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acaaatccat agggagctct gccttaccat tgggttccta attaactgag tgagtgggtg   60
tgttctgcat ggtgagaggc attggaatga tgcatcagaa aacatgtcat aatgtcatca   120
ctgtaatatg acaagaattg cagctgtggc tggaaccttt ataaagtgac caagcacacc   180
ttttcatcca gtctcagcgt ggggtgaagc ctagcagct atg agg atc cat tat   234
                                        Met Arg Ile His Tyr
                                        1   5

ctt ctg ttt gct ttg ctc ttc ctg ttt ttg gtg cct gtt cca ggt cat   282
Leu Leu Phe Ala Leu Leu Phe Leu Phe Leu Val Pro Val Pro Gly His
                10   15   20

gga gga atc ata aac aca tta cag aaa tat tat tgc aga gtc aga ggc   330
Gly Gly Ile Ile Asn Thr Leu Gln Lys Tyr Tyr Cys Arg Val Arg Gly
                25   30   35

ggc cgg tgt gct gtg ctc agc tgc ctt cca aag gag gaa cag atc ggc   378
Gly Arg Cys Ala Val Leu Ser Cys Leu Pro Lys Glu Glu Gln Ile Gly
        40   45   50

aag tgc tcg acg cgt ggc cga aaa tgc tgc cga aga aag aaa   420
Lys Cys Ser Thr Arg Gly Arg Lys Cys Cys Arg Arg Lys Lys
        55   60   65

taaaaaccct gaaacatg   438

<210> 10
<211> 67
<212> PRT
<213> Homo sapiens

<400> 10

Met	Arg	Ile	His	Tyr	Leu	Leu	Phe	Ala	Leu	Leu	Phe	Leu	Phe	Leu	Val
1				5					10					15	

Pro	Val	Pro	Gly	His	Gly	Gly	Ile	Ile	Asn	Thr	Leu	Gln	Lys	Tyr	Tyr
			20					25					30		

Cys	Arg	Val	Arg	Gly	Gly	Arg	Cys	Ala	Val	Leu	Ser	Cys	Leu	Pro	Lys
	35					40					45				

Glu	Glu	Gln	Ile	Gly	Lys	Cys	Ser	Thr	Arg	Gly	Arg	Lys	Cys	Cys	Arg
	50				55					60					

Arg Lys Lys
65

<210> 11
<211> 219
<212> DNA
<213> Artificial Sequence

<220>
<223> Degenerate nucleotide sequence encoding the
     polypeptide of SEQ ID NO:10

<221> variation
<222> (1)...(219)
<223> Nucleotides 6, 18, 21, 27, 30, 33, 39, 45, 48, 51,
     54, 57, 60, 66, 69, 81, 84, 94, 95, 96, 102, 105,
     108, 111, 114, 117, 123, 126, 129, 132, 138, 141,
     159, 168, 171, 174, 177, 180, 192, 195, and 210
     are each independently A, T, C, or G.

<400> 11

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atgmgnathc aytayytnyt nttygcnytn ytnttyytnt tyytngtncc ngtnccnggn     60
cayggnggna thathaayac nytncaraar trrnnntgym gngtnmgngg nggnmgntgy    120
gcngtnytnw sntgyytncc naargargar carathggna artgywsnac nmgnggnmgn    180
aartgytgym gnmgnaaraa rtrraarccn trraayatg                          219
```

<210> 12
<211> 21
<212> DNA
<213> Artificial Sequence

<220>
<223> Oligonucleotide ZC15591

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        <400> 12
tgccgatctg ttcctccttt g                                              21


        <210> 13
        <211> 25
        <212> DNA
        <213> Artificial Sequence


        <220>
        <223> Oligonucleotide ZC15589


        <400> 13
gaacaggcac caaaaacagg aagag                                          25


        <210> 14
        <211> 37
        <212> PRT
        <213> Artificial Sequence


        <220>
        <223> Defensin polypeptide


        <400> 14
Gln Lys Tyr Tyr Cys Arg Val Arg Tyr Tyr Arg Cys Ala Val Leu Ser
1                   5                   10                  15
Cys Leu Pro Lys Glu Glu Gln Ile Tyr Lys Cys Ser Thr Arg Tyr Arg
                20                  25                  30
Lys Cys Cys Arg Arg
        35


        <210> 15
        <211> 29
        <212> PRT
        <213> Artificial Sequence


        <220>
        <223> Defensin polypeptide


        <221> VARIANT
        <222> (26)...(26)
        <223> Xaa is Leu, Ile, Val, Phe or Met.
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<400> 15
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Gly Arg Cys Ala Val Leu Ser Cys Leu Pro Lys Glu Glu Cys Ile Gly
1               5                   10                  15
Lys Met Ser Thr Arg Gly Arg Lys Cys Xaa Arg Arg Lys
            20                  25
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<210> 16
<211> 30
<212> PRT
<213> Artificial Sequence

<220>
<223> Defensin polypeptide

<221> VARIANT
<222> (26)...(26)
<223> Xaa is Leu, Ile, Val, Phe or Met.

<400> 16
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Gly Arg Cys Ala Val Leu Ser Cys Leu Pro Lys Glu Glu Cys Ile Gly
1               5                   10                  15
Lys Met Ser Thr Arg Gly Arg Lys Cys Xaa Arg Arg Lys Lys
            20                  25                  30
```

<210> 17
<211> 27
<212> PRT
<213> Artificial Sequence

<220>
<223> Defensin polypeptide

<221> VARIANT
<222> (26)...(26)
<223> Xaa is Leu, Ile, Val, Phe or Met.

<400> 17
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Gly Arg Cys Ala Val Leu Ser Cys Leu Pro Lys Glu Glu Cys Ile Gly
1               5                   10                  15
Lys Met Ser Thr Arg Gly Arg Lys Cys Xaa Arg
            20                  25
```

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<210> 18
<211> 38
<212> PRT
<213> Artificial Sequence

<220>
<223> Defensin polypeptide

<400> 18
Gln Lys Tyr Tyr Cys Arg Val Arg Tyr Tyr Arg Cys Ala Val Leu Ser
1               5                   10                  15
Cys Leu Pro Lys Glu Glu Gln Ile Tyr Lys Cys Ser Thr Arg Tyr Arg
            20                  25                  30
Lys Cys Cys Arg Arg Lys
        35

<210> 19
<211> 39
<212> PRT
<213> Artificial Sequence

<220>
<223> Defensin polypeptide

<400> 19
Gln Lys Tyr Tyr Cys Arg Val Arg Tyr Tyr Arg Cys Ala Val Leu Ser
1               5                   10                  15
Cys Leu Pro Lys Glu Glu Gln Ile Tyr Lys Cys Ser Thr Arg Tyr Arg
            20                  25                  30
Lys Cys Cys Arg Arg Lys Lys
        35

<210> 20
<211> 44
<212> PRT
<213> Artificial Sequence

<220>
<223> Defensin Polypeptide

<400> 20
Ile Ile Asn Thr Leu Gln Lys Tyr Tyr Cys Arg Val Arg Tyr Tyr Arg
1               5                   10                  15
```

```
Cys Ala Val Leu Ser Cys Leu Pro Lys Glu Glu Gln Ile Tyr Lys Cys
            20                  25                  30
Ser Thr Arg Tyr Arg Lys Cys Cys Arg Arg Lys Lys
        35                  40
```

<210> 21
<211> 43
<212> PRT
<213> Artificial Sequence

<220>
<223> Defensin polypeptide

<400> 21
```
Ile Ile Asn Thr Leu Gln Lys Tyr Tyr Cys Arg Val Arg Tyr Tyr Arg
1               5                   10                  15
Cys Ala Val Leu Ser Cys Leu Pro Lys Glu Glu Gln Ile Tyr Lys Cys
            20                  25                  30
Ser Thr Arg Tyr Arg Lys Cys Cys Arg Arg Lys
        35                  40
```

<210> 22
<211> 42
<212> PRT
<213> Artificial Sequence

<220>
<223> Defensin polypeptide

<400> 22
```
Ile Ile Asn Thr Leu Gln Lys Tyr Tyr Cys Arg Val Arg Tyr Tyr Arg
1               5                   10                  15
Cys Ala Val Leu Ser Cys Leu Pro Lys Glu Glu Gln Ile Tyr Lys Cys
            20                  25                  30
Ser Thr Arg Tyr Arg Lys Cys Cys Arg Arg
        35                  40
```

<210> 23
<211> 43
<212> PRT
<213> Artificial Sequence

<220>

<223> Defensin polypeptide

<400> 23
Ile Asn Thr Leu Gln Lys Tyr Tyr Cys Arg Val Arg Tyr Tyr Arg Cys
1   5   10   15
Ala Val Leu Ser Cys Leu Pro Lys Glu Glu Gln Ile Tyr Lys Cys Ser
                20   25   30
Thr Arg Tyr Arg Lys Cys Cys Arg Arg Lys Lys
            35   40

<210> 24
<211> 42
<212> PRT
<213> Artificial Sequence

<220>
<223> Defensin polypeptide

<400> 24
Ile Asn Thr Leu Gln Lys Tyr Tyr Cys Arg Val Arg Tyr Tyr Arg Cys
1   5   10   15
Ala Val Leu Ser Cys Leu Pro Lys Glu Glu Gln Ile Tyr Lys Cys Ser
                20   25   30
Thr Arg Tyr Arg Lys Cys Cys Arg Arg Lys
            35   40

<210> 25
<211> 41
<212> PRT
<213> Artificial Sequence

<220>
<223> Defensin polypeptide

<400> 25
Ile Asn Thr Leu Gln Lys Tyr Tyr Cys Arg Val Arg Tyr Tyr Arg Cys
1   5   10   15
Ala Val Leu Ser Cys Leu Pro Lys Glu Glu Gln Ile Tyr Lys Cys Ser
                20   25   30
Thr Arg Tyr Arg Lys Cys Cys Arg Arg
            35   40

<210> 26

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<211> 42
<212> PRT
<213> Artificial Sequence

<220>
<223> Defensin polypeptide

<400> 26
Asn Thr Leu Gln Lys Tyr Tyr Cys Arg Val Arg Tyr Tyr Arg Cys Ala
1               5                   10                  15
Val Leu Ser Cys Leu Pro Lys Glu Glu Gln Ile Tyr Lys Cys Ser Thr
            20                  25                  30
Arg Tyr Arg Lys Cys Cys Arg Arg Lys Lys
        35                  40

<210> 27
<211> 41
<212> PRT
<213> Artificial Sequence

<220>
<223> Defensin polypeptide

<400> 27
Asn Thr Leu Gln Lys Tyr Tyr Cys Arg Val Arg Tyr Tyr Arg Cys Ala
 1              5                   10                  15
Val Leu Ser Cys Leu Pro Lys Glu Glu Gln Ile Tyr Lys Cys Ser Thr
            20                  25                  30
Arg Tyr Arg Lys Cys Cys Arg Arg Lys
        35                  40

<210> 28
<211> 40
<212> PRT
<213> Artificial Sequence

<220>
<223> Defensin polypeptide

<400> 28
Asn Thr Leu Gln Lys Tyr Tyr Cys Arg Val Arg Tyr Tyr Arg Cys Ala
1               5                   10                  15
Val Leu Ser Cys Leu Pro Lys Glu Glu Gln Ile Tyr Lys Cys Ser Thr
```

```
                20                          25                          30
Arg Tyr Arg Lys Cys Cys Arg Arg
        35                  40
```

<210> 29
<211> 41
<212> PRT
<213> Artificial Sequence

<220>
<223> Defensin polypeptide

<400> 29
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Thr Leu Gln Lys Tyr Tyr Cys Arg Val Arg Tyr Tyr Arg Cys Ala Val
1               5                   10                  15
Leu Ser Cys Leu Pro Lys Glu Glu Gln Ile Tyr Lys Cys Ser Thr Arg
                20                  25                  30
Tyr Arg Lys Cys Cys Arg Arg Lys Lys
        35                  40
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<210> 30
<211> 40
<212> PRT
<213> Artificial Sequence

<220>
<223> Defensin polypeptide

<400> 30
```
Thr Leu Gln Lys Tyr Tyr Cys Arg Val Arg Tyr Tyr Arg Cys Ala Val
1               5                   10                  15
Leu Ser Cys Leu Pro Lys Glu Glu Gln Ile Tyr Lys Cys Ser Thr Arg
                20                  25                  30
Tyr Arg Lys Cys Cys Arg Arg Lys
        35                  40
```

<210> 31
<211> 39
<212> PRT
<213> Artificial Sequence

<220>
<223> Defensin polypeptide

<400> 31

Thr Leu Gln Lys Tyr Tyr Cys Arg Val Arg Tyr Tyr Arg Cys Ala Val
1   5   10   15
Leu Ser Cys Leu Pro Lys Glu Glu Gln Ile Tyr Lys Cys Ser Thr Arg
                20   25   30
Tyr Arg Lys Cys Cys Arg Arg
            35

<210> 32
<211> 40
<212> PRT
<213> Artificial Sequence

<220>
<223> Defensin polypeptide

<400> 32

Leu Gln Lys Tyr Tyr Cys Arg Val Arg Tyr Tyr Arg Cys Ala Val Leu
1   5   10   15
Ser Cys Leu Pro Lys Glu Glu Gln Ile Tyr Lys Cys Ser Thr Arg Tyr
                20   25   30
Arg Lys Cys Cys Arg Arg Lys Lys
            35   40

<210> 33
<211> 39
<212> PRT
<213> Artificial Sequence

<220>
<223> Defensin polypeptide

<400> 33

Leu Gln Lys Tyr Tyr Cys Arg Val Arg Tyr Tyr Arg Cys Ala Val Leu
1   5   10   15
Ser Cys Leu Pro Lys Glu Glu Gln Ile Tyr Lys Cys Ser Thr Arg Tyr
                20   25   30
Arg Lys Cys Cys Arg Arg Lys
            35

<210> 34
<211> 38

<212> PRT
<213> Artificial Sequence

<220>
<223> Defensin polypeptide

<400> 34
Leu Gln Lys Tyr Tyr Cys Arg Val Arg Tyr Tyr Arg Cys Ala Val Leu
1   5   10   15
Ser Cys Leu Pro Lys Glu Glu Gln Ile Tyr Lys Cys Ser Thr Arg Tyr
            20   25   30
Arg Lys Cys Cys Arg Arg
        35

<210> 35
<211> 49
<212> PRT
<213> Artificial Sequence

<220>
<223> Defensin polypeptide

<221> VARIANT
<222> (45)...(45)
<223> Xaa is leu, ile, val, phe, or met

<400> 35
Pro Gly His Gly Gly Ile Ile Asn Thr Leu Gln Leu Tyr Tyr Cys Arg
1   5   10   15
Val Arg Gly Gly Arg Cys Ala Val Leu Ser Cys Leu Pro Lys Glu Glu
            20   25   30
Cys Ile Gly Lys Met Ser Thr Arg Gly Arg Lys Cys Xaa Arg Arg Lys
        35   40   45
Lys

<210> 36
<211> 48
<212> PRT
<213> Artificial Sequence

<220>
<223> Defensin polypeptide

<221> VARIANT
<222> (45)...(45)
<223> Xaa is leu, ile, val, phe, or met

<400> 36
Pro Gly His Gly Gly Ile Ile Asn Thr Leu Gln Leu Tyr Tyr Cys Arg
1   5   10   15
Val Arg Gly Gly Arg Cys Ala Val Leu Ser Cys Leu Pro Lys Glu Glu
                20   25   30
Cys Ile Gly Lys Met Ser Thr Arg Gly Arg Lys Cys Xaa Arg Arg Lys
        35   40   45

<210> 37
<211> 48
<212> PRT
<213> Artificial Sequence

<220>
<223> Defensin polypeptide

<221> VARIANT
<222> (44)...(44)
<223> Xaa is leu, ile, phe, val, or met

<400> 37
Gly His Gly Gly Ile Ile Asn Thr Leu Gln Leu Tyr Tyr Cys Arg Val
1   5   10   15
Arg Gly Gly Arg Cys Ala Val Leu Ser Cys Leu Pro Lys Glu Glu Cys
                20   25   30
Ile Gly Lys Met Ser Thr Arg Gly Arg Lys Cys Xaa Arg Arg Lys Lys
        35   40   45

<210> 38
<211> 47
<212> PRT
<213> Artificial Sequence

<220>
<223> Defensin polypeptide

<221> VARIANT
<222> (44)...(44)

<223> Xaa is leu, ile, val, phe, or met.

<400> 38
Gly His Gly Gly Ile Ile Asn Thr Leu Gln Leu Tyr Tyr Cys Arg Val
1   5   10   15
Arg Gly Gly Arg Cys Ala Val Leu Ser Cys Leu Pro Lys Glu Glu Cys
            20   25   30
Ile Gly Lys Met Ser Thr Arg Gly Arg Lys Cys Xaa Arg Arg Lys
        35   40   45

<210> 39
<211> 47
<212> PRT
<213> Artificial Sequence

<220>
<223> Defensin polypeptide

<221> VARIANT
<222> (43)...(43)
<223> Xaa is leu, ile, val, phe, or met

<400> 39
His Gly Gly Ile Ile Asn Thr Leu Gln Leu Tyr Tyr Cys Arg Val Arg
1   5   10   15
Gly Gly Arg Cys Ala Val Leu Ser Cys Leu Pro Lys Glu Glu Cys Ile
            20   25   30
Gly Lys Met Ser Thr Arg Gly Arg Lys Cys Xaa Arg Arg Lys Lys
        35   40   45

<210> 40
<211> 46
<212> PRT
<213> Artificial Sequence

<220>
<223> Defensin polypeptide

<221> VARIANT
<222> (43)...(43)
<223> Xaa is leu, ile, phe, val, or met

<400> 40

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His Gly Gly Ile Ile Asn Thr Leu Gln Leu Tyr Tyr Cys Arg Val Arg
1               5               10                  15
Gly Gly Arg Cys Ala Val Leu Ser Cys Leu Pro Lys Glu Glu Cys Ile
            20              25                  30
Gly Lys Met Ser Thr Arg Gly Arg Lys Cys Xaa Arg Arg Lys
        35                  40                  45
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<210> 41
<211> 46
<212> PRT
<213> Artificial Sequence

<220>
<223> Defensin polypeptide

<221> VARIANT
<222> (42)...(42)
<223> Xaa is leu, ile, phe, val, or met

<400> 41
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Gly Gly Ile Ile Asn Thr Leu Gln Leu Tyr Tyr Cys Arg Val Arg Gly
1               5               10                  15
Gly Arg Cys Ala Val Leu Ser Cys Leu Pro Lys Glu Glu Cys Ile Gly
            20              25                  30
Lys Met Ser Thr Arg Gly Arg Lys Cys Xaa Arg Arg Lys Lys
        35                  40                  45
```

<210> 42
<211> 45
<212> PRT
<213> Artificial Sequence

<220>
<223> Defensin polypeptide

<221> VARIANT
<222> (42)...(42)
<223> Xaa is leu, ile, phe, val, or met

<400> 42
```
Gly Gly Ile Ile Asn Thr Leu Gln Leu Tyr Tyr Cys Arg Val Arg Gly
1               5               10                  15
Gly Arg Cys Ala Val Leu Ser Cys Leu Pro Lys Glu Glu Cys Ile Gly
```

```
                    20                      25                      30
        Lys Met Ser Thr Arg Gly Arg Lys Cys Xaa Arg Arg Lys
                35                      40                      45
```

<210> 43
<211> 45
<212> PRT
<213> Artificial Sequence

<220>
<223> Defensin polypeptide

<221> VARIANT
<222> (41)...(41)
<223> Xaa is leu, ile, val, phe, or met

<400> 43

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Gly Ile Ile Asn Thr Leu Gln Leu Tyr Tyr Cys Arg Val Arg Gly Gly
1               5                       10                      15
Arg Cys Ala Val Leu Ser Cys Leu Pro Lys Glu Glu Cys Ile Gly Lys
                20                      25                      30
Met Ser Thr Arg Gly Arg Lys Cys Xaa Arg Arg Lys Lys
        35                      40                      45
```

<210> 44
<211> 44
<212> PRT
<213> Artificial Sequence

<220>
<223> Defensin polypeptide

<221> VARIANT
<222> (41)...(41)
<223> Xaa is leu, ile, phe, val, or met

<400> 44

```
Gly Ile Ile Asn Thr Leu Gln Leu Tyr Tyr Cys Arg Val Arg Gly Gly
1               5                       10                      15
Arg Cys Ala Val Leu Ser Cys Leu Pro Lys Glu Glu Cys Ile Gly Lys
                20                      25                      30
Met Ser Thr Arg Gly Arg Lys Cys Xaa Arg Arg Lys
        35                      40
```

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<210> 45
<211> 44
<212> PRT
<213> Artificial Sequence

<220>
<223> Defensin polypeptide

<221> VARIANT
<222> (40)...(40)
<223> Xaa is leu, ile, phe, val, met.

<400> 45
Ile Ile Asn Thr Leu Gln Leu Tyr Tyr Cys Arg Val Arg Gly Gly Arg
1               5                   10                  15
Cys Ala Val Leu Ser Cys Leu Pro Lys Glu Glu Cys Ile Gly Lys Met
                20              25                  30
Ser Thr Arg Gly Arg Lys Cys Xaa Arg Arg Lys Lys
        35                  40


<210> 46
<211> 43
<212> PRT
<213> Artificial Sequence

<220>
<223> Defensin polypeptide

<221> VARIANT
<222> (40)...(40)
<223> Xaa is leu, ile, phe, val, or met

<400> 46
Ile Ile Asn Thr Leu Gln Leu Tyr Tyr Cys Arg Val Arg Gly Gly Arg
1               5                   10                  15
Cys Ala Val Leu Ser Cys Leu Pro Lys Glu Glu Cys Ile Gly Lys Met
                20              25                  30
Ser Thr Arg Gly Arg Lys Cys Xaa Arg Arg Lys
        35                  40


<210> 47
<211> 43
```

<212> PRT
<213> Artificial Sequence

<220>
<223> Defensin polypeptide

<221> VARIANT
<222> (39)...(39)
<223> Xaa is leu, ile, val, phe, or met.

<400> 47
Ile Asn Thr Leu Gln Leu Tyr Tyr Cys Arg Val Arg Gly Gly Arg Cys
1   5   10   15
Ala Val Leu Ser Cys Leu Pro Lys Glu Glu Cys Ile Gly Lys Met Ser
                20   25   30
Thr Arg Gly Arg Lys Cys Xaa Arg Arg Lys Lys
        35   40

<210> 48
<211> 42
<212> PRT
<213> Artificial Sequence

<220>
<223> Defensin polypeptide

<221> VARIANT
<222> (39)...(39)
<223> Xaa is leu, ile, phe, val, or met

<400> 48
Ile Asn Thr Leu Gln Leu Tyr Tyr Cys Arg Val Arg Gly Gly Arg Cys
1   5   10   15
Ala Val Leu Ser Cys Leu Pro Lys Glu Glu Cys Ile Gly Lys Met Ser
                20   25   30
Thr Arg Gly Arg Lys Cys Xaa Arg Arg Lys
        35   40

<210> 49
<211> 42
<212> PRT
<213> Artificial Sequence

<220>
<223> Defensin polypeptide

<221> VARIANT
<222> (38)...(38)
<223> Xaa is leu, ile, phe, val, or met

<400> 49
Asn Thr Leu Gln Leu Tyr Tyr Cys Arg Val Arg Gly Gly Arg Cys Ala
1   5   10   15
Val Leu Ser Cys Leu Pro Lys Glu Glu Cys Ile Gly Lys Met Ser Thr
            20   25   30
Arg Gly Arg Lys Cys Xaa Arg Arg Lys Lys
        35   40

<210> 50
<211> 41
<212> PRT
<213> Artificial Sequence

<220>
<223> Defensin polypeptide

<221> VARIANT
<222> (38)...(38)
<223> Xaa is ile, leu, phe, val, or met

<400> 50
Asn Thr Leu Gln Leu Tyr Tyr Cys Arg Val Arg Gly Gly Arg Cys Ala
1   5   10   15
Val Leu Ser Cys Leu Pro Lys Glu Glu Cys Ile Gly Lys Met Ser Thr
            20   25   30
Arg Gly Arg Lys Cys Xaa Arg Arg Lys
        35   40

<210> 51
<211> 41
<212> PRT
<213> Artificial Sequence

<220>
<223> Defensin polypeptide

<221> VARIANT
<222> (37)...(37)
<223> Xaa is ile, leu, val, phe, or met

<400> 51
Thr Leu Gln Leu Tyr Tyr Cys Arg Val Arg Gly Gly Arg Cys Ala Val
1   5   10   15
Leu Ser Cys Leu Pro Lys Glu Glu Cys Ile Gly Lys Met Ser Thr Arg
            20   25   30
Gly Arg Lys Cys Xaa Arg Arg Lys Lys
        35   40

<210> 52
<211> 40
<212> PRT
<213> Artificial Sequence

<220>
<223> Defensin polypeptide

<221> VARIANT
<222> (37)...(37)
<223> Xaa is met, leu, ile, val, or phe

<400> 52
Thr Leu Gln Leu Tyr Tyr Cys Arg Val Arg Gly Gly Arg Cys Ala Val
1   5   10   15
Leu Ser Cys Leu Pro Lys Glu Glu Cys Ile Gly Lys Met Ser Thr Arg
            20   25   30
Gly Arg Lys Cys Xaa Arg Arg Lys
        35   40

<210> 53
<211> 40
<212> PRT
<213> Artificial Sequence

<220>
<223> Defensin polypeptide

<221> VARIANT
<222> (36)...(36)
<223> Xaa is ile, leu, val, phe, or met

<400> 53

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Leu Gln Leu Tyr Tyr Cys Arg Val Arg Gly Gly Arg Cys Ala Val Leu
1               5                   10                  15
Ser Cys Leu Pro Lys Glu Glu Cys Ile Gly Lys Met Ser Thr Arg Gly
                20                  25                  30
Arg Lys Cys Xaa Arg Arg Lys Lys
        35                  40
```

<210> 54
<211> 39
<212> PRT
<213> Artificial Sequence

<220>
<223> Defensin polypeptide

<221> VARIANT
<222> (36)...(36)
<223> Xaa is leu, ile, met, phe, or val

<400> 54

```
Leu Gln Leu Tyr Tyr Cys Arg Val Arg Gly Gly Arg Cys Ala Val Leu
1               5                   10                  15
Ser Cys Leu Pro Lys Glu Glu Cys Ile Gly Lys Met Ser Thr Arg Gly
                20                  25                  30
Arg Lys Cys Xaa Arg Arg Lys
        35
```

<210> 55
<211> 39
<212> PRT
<213> Artificial Sequence

<220>
<223> Defensin polypeptide

<221> VARIANT
<222> (35)...(35)
<223> Xaa is leu, val, ile, met, or phe

<400> 55

```
Gln Leu Tyr Tyr Cys Arg Val Arg Gly Gly Arg Cys Ala Val Leu Ser
```

```
1                 5                      10                    15
Cys Leu Pro Lys Glu Glu Cys Ile Gly Lys Met Ser Thr Arg Gly Arg
            20                  25                  30
Lys Cys Xaa Arg Arg Lys Lys
        35 ·
```

        <210> 56
        <211> 38
        <212> PRT
        <213> Artificial Sequence

        <220>
        <223> Defensin polypeptide

        <221> VARIANT
        <222> (35)...(35)
        <223> Xaa is ile, leu, val, phe, or met

        <400> 56

```
Gln Leu Tyr Tyr Cys Arg Val Arg Gly Gly Arg Cys Ala Val Leu Ser
1.              5                   10                  15
Cys Leu Pro Lys Glu Glu Cys Ile Gly Lys Met Ser Thr Arg Gly Arg
            20                  25                  30
Lys Cys Xaa Arg Arg Lys
        35
```

        <210> 57
        <211> 38
        <212> PRT
        <213> Artificial Sequence

        <220>
        <223> Defensin polypeptide

        <221> VARIANT
        <222> (34)...(34)
        <223> Xaa is ile, leu, val, phe, or met

        <400> 57

```
Leu Tyr Tyr Cys Arg Val Arg Gly Gly Arg Cys Ala Val Leu Ser Cys
1               5                   10                  15
Leu Pro Lys Glu Glu Cys Ile Gly Lys Met Ser Thr Arg Gly Arg Lys
            20                  25                  30
```

Cys Xaa Arg Arg Lys Lys
        35

        <210> 58
        <211> 37
        <212> PRT
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        <220>
        <223> Defensin polypeptide

        <221> VARIANT
        <222> (34)...(34)
        <223> Xaa is ile, leu, val, phe, or met

        <400> 58
Leu Tyr Tyr Cys Arg Val Arg Gly Gly Arg Cys Ala Val Leu Ser Cys
1   5   10   15
Leu Pro Lys Glu Glu Cys Ile Gly Lys Met Ser Thr Arg Gly Arg Lys
                20   25   30
Cys Xaa Arg Arg Lys
        35

        <210> 59
        <211> 37
        <212> PRT
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        <220>
        <223> Defensin polypeptide

        <221> VARIANT
        <222> (33)...(33)
        <223> Xaa is ile, leu, met, phe, or val

        <400> 59
Tyr Tyr Cys Arg Val Arg Gly Gly Arg Cys Ala Val Leu Ser Cys Leu
1   5   10   15
Pro Lys Glu Glu Cys Ile Gly Lys Met Ser Thr Arg Gly Arg Lys Cys
                20   25   30
Xaa Arg Arg Lys Lys
        35

<210> 60
<211> 36
<212> PRT
<213> Artificial Sequence

<220>
<223> Defensin polypeptide

<221> VARIANT
<222> (33)...(33)
<223> Xaa is ile, leu, val, phe, or met

<400> 60
Tyr Tyr Cys Arg Val Arg Gly Gly Arg Cys Ala Val Leu Ser Cys Leu
1   5   10   15
Pro Lys Glu Glu Cys Ile Gly Lys Met Ser Thr Arg Gly Arg Lys Cys
            20   25   30
Xaa Arg Arg Lys
        35

<210> 61
<211> 36
<212> PRT
<213> Artificial Sequence

<220>
<223> Defensin polypeptide

<221> VARIANT
<222> (32)...(32)
<223> Xaa is leu, ile, val, met, or phe

<400> 61
Tyr Cys Arg Val Arg Gly Gly Arg Cys Ala Val Leu Ser Cys Leu Pro
1   5   10   15
Lys Glu Glu Cys Ile Gly Lys Met Ser Thr Arg Gly Arg Lys Cys Xaa
            20   25   30
Arg Arg Lys Lys
        35

<210> 62
<211> 35
<212> PRT

<220>
<223> Defensin polypeptide

<221> VARIANT
<222> (32)...(32)
<223> Xaa is phe, val, ile, leu, or met

<400> 62
Tyr Cys Arg Val Arg Gly Gly Arg Cys Ala Val Leu Ser Cys Leu Pro
1   5   10   15
Lys Glu Glu Cys Ile Gly Lys Met Ser Thr Arg Gly Arg Lys Cys Xaa
            20   25   30
Arg Arg Lys
        35

<210> 63
<211> 35
<212> PRT
<213> Artificial Sequence

<220>
<223> Defensin polypeptide

<221> VARIANT
<222> (31)...(31)
<223> Xaa is ile, leu, phe, val, or met

<400> 63
Cys Arg Val Arg Gly Gly Arg Cys Ala Val Leu Ser Cys Leu Pro Lys
1   5   10   15
Glu Glu Cys Ile Gly Lys Met Ser Thr Arg Gly Arg Lys Cys Xaa Arg
            20   25   30
Arg Lys Lys
        35

<210> 64
<211> 34
<212> PRT
<213> Artificial Sequence

<220>

<223> Defensin polypeptide

<221> VARIANT
<222> (31)...(31)
<223> Xaa is ile, leu, val, phe, or met

<400> 64
Cys Arg Val Arg Gly Gly Arg Cys Ala Val Leu Ser Cys Leu Pro Lys
1   5   10   15
Glu Glu Cys Ile Gly Lys Met Ser Thr Arg Gly Arg Lys Cys Xaa Arg
            20   25   30
Arg Lys

<210> 65
<211> 34
<212> PRT
<213> Artificial Sequence

<220>
<223> Defensin polypeptide

<221> VARIANT
<222> (30)...(30)
<223> Xaa is ile, leu, val, phe, or met

<400> 65
Arg Val Arg Gly Gly Arg Cys Ala Val Leu Ser Cys Leu Pro Lys Glu
1   5   10   15
Glu Cys Ile Gly Lys Met Ser Thr Arg Gly Arg Lys Cys Xaa Arg Arg
            20   25   30
Lys Lys

<210> 66
<211> 33
<212> PRT
<213> Artificial Sequence

<220>
<223> Defensin polypeptide

<221> VARIANT

<222> (30)...(30)
<223> Xaa is leu, ile, val, phe, or met

<400> 66
Arg Val Arg Gly Gly Arg Cys Ala Val Leu Ser Cys Leu Pro Lys Glu
1   5   10   15
Glu Cys Ile Gly Lys Met Ser Thr Arg Gly Arg Lys Cys Xaa Arg Arg
            20   25   30
Lys

<210> 67
<211> 33
<212> PRT
<213> Artificial Sequence

<220>
<223> Defensin polypeptide

<221> VARIANT
<222> (29)...(29)
<223> Xaa is ile, leu, val, phe, or met

<400> 67
Val Arg Gly Gly Arg Cys Ala Val Leu Ser Cys Leu Pro Lys Glu Glu
1   5   10   15
Cys Ile Gly Lys Met Ser Thr Arg Gly Arg Lys Cys Xaa Arg Arg Lys
            20   25   30
Lys

<210> 68
<211> 32
<212> PRT
<213> Artificial Sequence

<220>
<223> Defensin polypeptide

<221> VARIANT
<222> (29)...(29)
<223> Xaa is leu, ile, phe, val, or met

<400> 68
Val Arg Gly Gly Arg Cys Ala Val Leu Ser Cys Leu Pro Lys Glu Glu
1   5   10   15
Cys Ile Gly Lys Met Ser Thr Arg Gly Arg Lys Cys Xaa Arg Arg Lys
            20   25   30

<210> 69
<211> 32
<212> PRT
<213> Artificial Sequence

<220>
<223> Defensin polypeptide

<221> VARIANT
<222> (28)...(28)
<223> Xaa is ile, leu, phe, val, or met

<400> 69
Arg Gly Gly Arg Cys Ala Val Leu Ser Cys Leu Pro Lys Glu Glu Cys
1   5   10   15
Ile Gly Lys Met Ser Thr Arg Gly Arg Lys Cys Xaa Arg Arg Lys Lys
            20   25   30

<210> 70
<211> 31
<212> PRT
<213> Artificial Sequence

<220>
<223> Defensin polypeptide

<221> VARIANT
<222> (28)...(28)
<223> Xaa is leu, ile, met, val, or phe

<400> 70
Arg Gly Gly Arg Cys Ala Val Leu Ser Cys Leu Pro Lys Glu Glu Cys
1   5   10   15
Ile Gly Lys Met Ser Thr Arg Gly Arg Lys Cys Xaa Arg Arg Lys
            20   25   30

<210> 71

<211> 31
<212> PRT
<213> Artificial Sequence

<220>
<223> Defensin polypeptide

<221> VARIANT
<222> (27)...(27)
<223> Xaa is ile. leu. met. phe. or val

<400> 71

Gly Gly Arg Cys Ala Val Leu Ser Cys Leu Pro Lys Glu Glu Cys Ile
1   5   10   15
Gly Lys Met Ser Thr Arg Gly Arg Lys Cys Xaa Arg Arg Lys Lys
            20   25   30

<210> 72
<211> 30
<212> PRT
<213> Artificial Sequence

<220>
<223> Defensin polypeptide

<221> VARIANT
<222> (27)...(27)
<223> Xaa is leu, ile, phe, val, or met

<400> 72

Gly Gly Arg Cys Ala Val Leu Ser Cys Leu Pro Lys Glu Glu Cys Ile
1   5   10   15
Gly Lys Met Ser Thr Arg Gly Arg Lys Cys Xaa Arg Arg Lys
            20   25   30